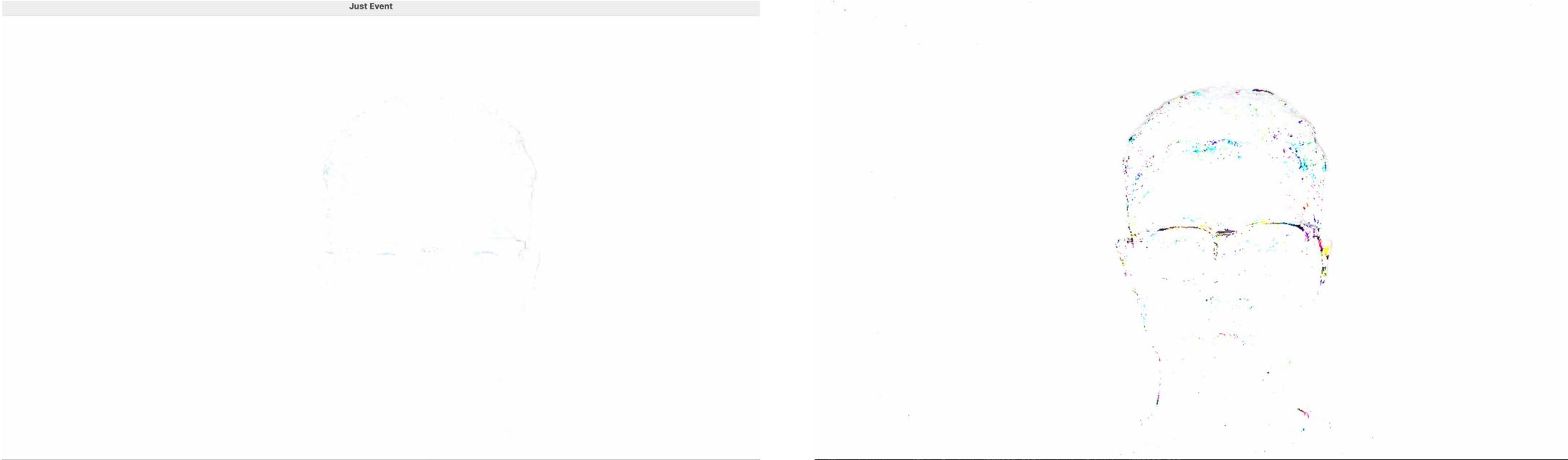


# EE5110 Segment B

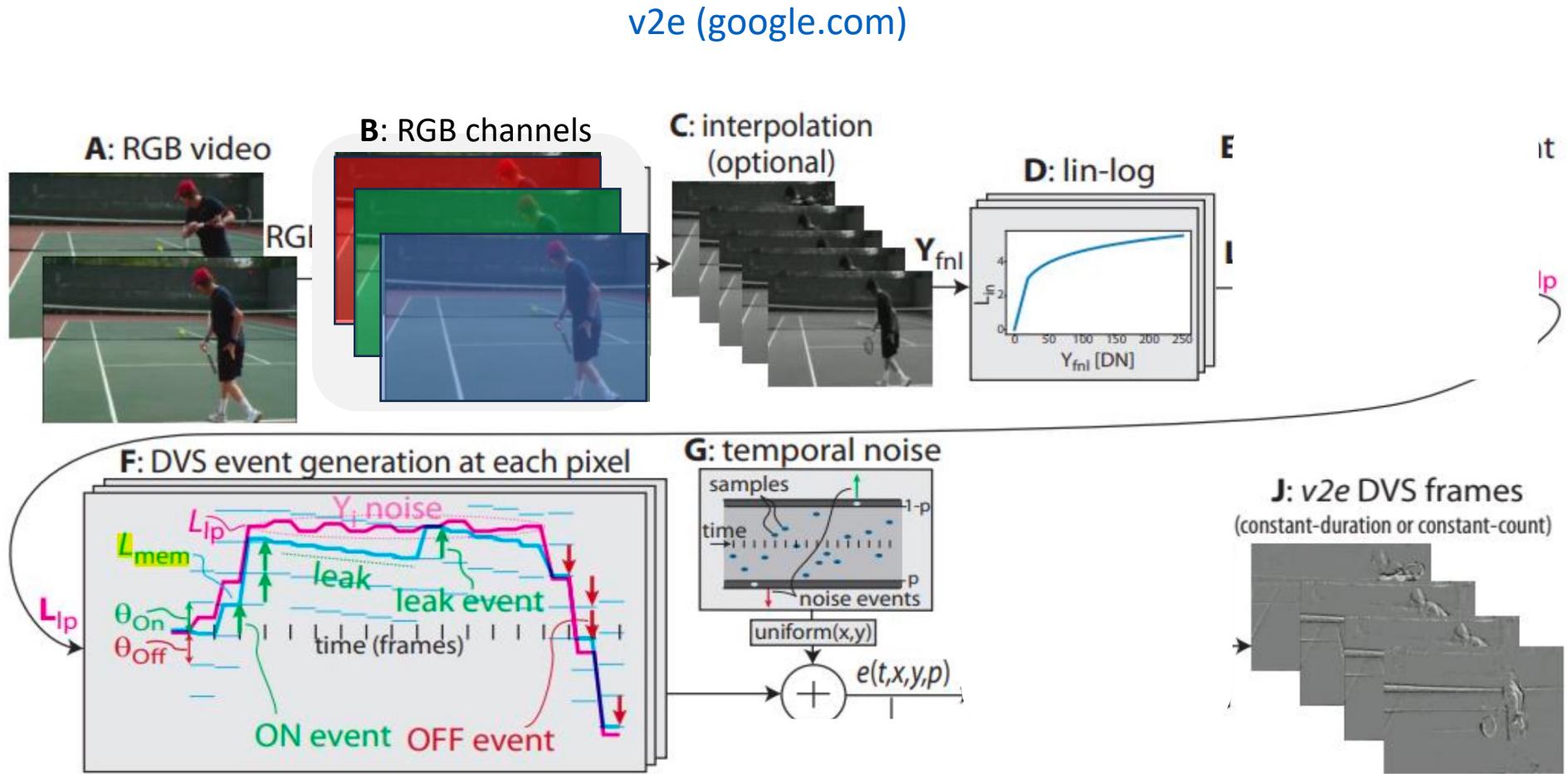
## Event Camera Simulator



# Final Output



# The processing flow



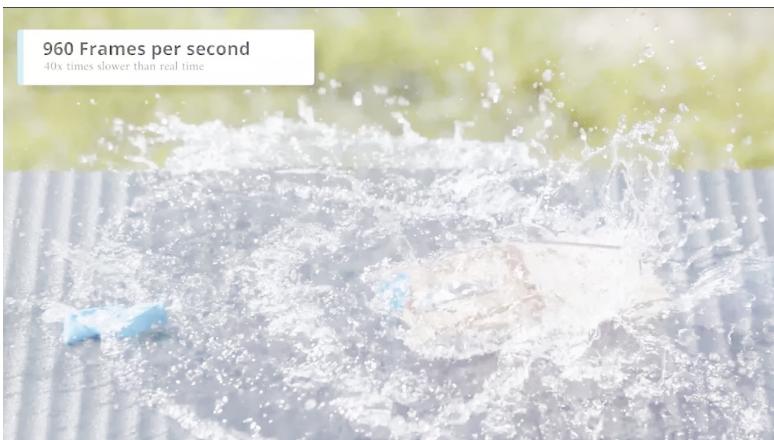
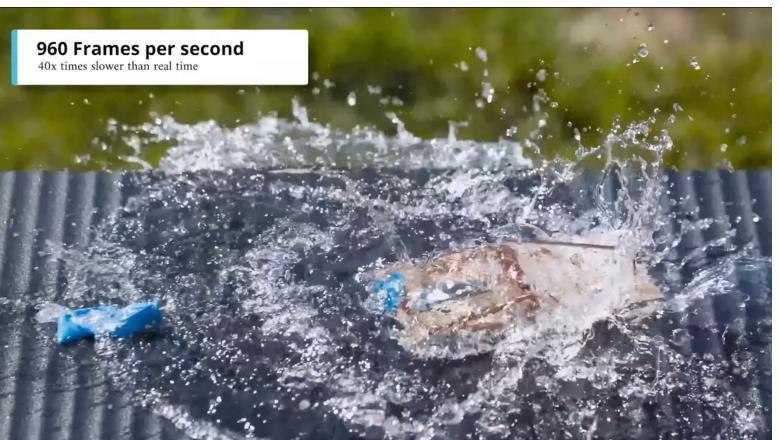
# Interpolate frame

Linear interpolation

```
int interpolated_frame_num = 1;  
float alpha = 0.5;  
addWeighted( src1: frame_last, alpha: 1 - alpha, src2: frame_current, beta: alpha, gamma: 0, dst: interpolated_frame);
```



# Log operation



# Log operation



No Log operation



With Log operation

# Log operation



No Log operation + difference



With Log operation + difference

# Noise

960 Frames per second  
40x times slower than real time

**960 Frames per second**

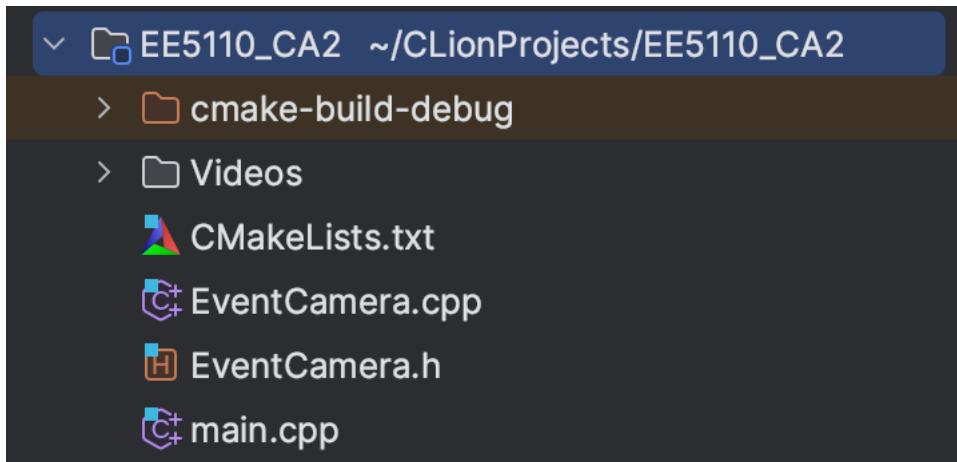
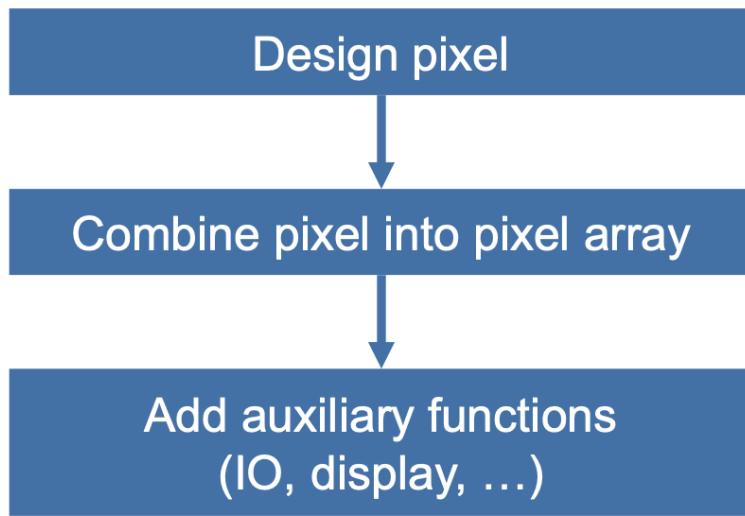
40x times slower than real time

960 Frames per second  
40x times slower than real time

**960 Frames per second**

40x times slower than real time

# Design process & Code structure



**Main.cpp:** Program entrance.

**EventCamera.h:** Head file for EventCamera, including key functions of event camera simulator, such as detecting event, log operation, add noise, Interpolate frame etc.

**EventCamera.cpp:** Function realization.

**Videos:** Contain input, output videos and test images.

# Other test & Further consideration

Blur the image can reduce the noise?

Edge detection can improve the result?

Running efficiency?

Output data compression?

# Conclusion

1. Have a deeper understanding of how event camera works.
2. Know the general effect of noise, illuminance, frame speed to event camera.
3. A chance for me to pick up C++ programming ability.
4. Have a general idea of how various algorism used in event camera.

# Reference

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<https://github.com/istdaslol/image-convolution/blob/main/convolution.cpp>

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[https://github.com/cogsys-tuebingen/event\\_simulator\\_ros](https://github.com/cogsys-tuebingen/event_simulator_ros)

<https://github.com/Alex-No-Bug/EventCamera/blob/master/1.cpp>

<https://github.com/SirTedDonGollcio/Event-Camera>

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